



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,511	04/13/2000	Jose P Arencibia JR.	ECG-100US	6778

7590 01/15/2004
James C Simmons
Ratner & Prestia
One Westlakes Berwyn Suite 301
P O Box 980
Valley Forge, PA 19482-0980

EXAMINER

RIDLEY, BASIA ANNA

ART UNIT PAPER NUMBER

1764

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/548,511	ARENCEBIA, JOSE P	
	Examiner	Art Unit	
	Basia Ridley <i>BR</i>	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-20 is/are pending in the application.
- 4a) Of the above claim(s) 6-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Specification

1. The disclosure is objected to because it contains informalities and inconsistencies too numerous to point out specifically. Applicant's cooperation is requested in reviewing the disclosure and correcting any errors of which applicant becomes aware. Examples of such instances are as follows:

- inconsistent numbering of elements: e.g. "liquid (...) exits the channel coil in line 15" (P13/L11-12) and "vapor (...) exits the channel coil via line 15" (throughout the specification) and;
- inconsistent numbering of elements; e.g. "a cylindrical section 111" (P13/L15-21) and "cylindrical section 120" (throughout the specification);
- on P14/L15, recitation "an conical" should be replaced with --a conical--;
- on P14/L20, recitation "vessel 110" should be replaced with --vessel 110, 114--;
- on P15/L5, recitation "wall 120" should be replaced with --wall 120, 125--;
- on P15/L7, recitation "vessel 110" should be replaced with --vessel 110, 114--;
- on P15/L8, recitation "wall 120" should be replaced with --wall 120, 125--;
- on P15/L19 (as amended), recitation "vessel 110 or 125" should be replaced with --vessel 110 or 114--;
- on P15/L26, recitation "120 125" should be replaced with --120, 125--;
- on P17/L1-2, recitation "wall thickness 120, 125" should be replaced with --thickness of wall 120, 125--;
- on P19/L26-27, recitation "hot gas and resultant condensate then heats the contents of

reaction vessel” should be replaced with --condensate then heats the contents of reaction vessel--;

- inconsistent numbering of elements:, e.g. “inlets 420” (P20/L27) and “annular space 420” (throughout specification);
- inconsistent numbering of elements:, e.g. “bottom opening 449” (P22/L5, amended); “airfoils 449” (P22/L12) and “wall 449” (throughout specification);
- on P25/L5, recitation “449 a” should be replaced with --449a--.

Appropriate correction is required. The applicant is reminded that the above instances are merely exemplary and that the entire specification(s) should be carefully reviewed and revised to avoid informalities and inconsistencies.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, received on 24 October 2003 have been disapproved. The reasons are set forth below.
3. Regarding corrections to Fig. 4, the examiner notes that while Fig. 4 was listed on page 11 of Amendment filed on 24 October 2003 as being amended, the “red-inked sketch” of said Fig. 4 was not included.
4. The following are some examples of the drawing objections. The actual objections are too numerous to point out specifically. Examples of such instances are as follows:

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

- “34” in Fig. 1B;
- “102” in Fig. 8B.

The drawings are objected to as failing to comply with 37 CFR 1.83(a) because they fail to show the following details as described in the specification:

- Fig. 1B does not show "mixing chamber 60" as described in specification, P13/L10;
- in Fig. 3B reference number "112" points to larger upper head, while the specification refers to "larger upper head 115" (P14/L9);
- in Fig. 5A-D, reference number "448" points to a wall, while the specification refers to "liquid (...) level shown as 448" (P19/L30);
- Fig. 5A-D, 6A-B, 7A-B and 9A-B do not show "inlet 420" as described in specification (P20/L27), because 420 in said figures refers to an annular space;
- in Fig. 5B, 5D, 7B, 9B, reference number "450" does not point to "boiling liquid" as described in specification (P21/L27);
- in Fig. 6A and 9A reference number "447" does not point to "bottom opening" as described in specification (P22/L1), but it points to a tube;
- in Fig. 7A reference numbers "447" for either of two baffles point to tubes and not to openings;
- Fig. 5D and 6B, do not show "top opening (...) 446" as described in specification (P22/L5, amended), further, the reference number "445" which seems to be referring to said top opening points to a tube and not to an opening;
- Fig. 7B, does not show "top opening (...) 446" for either of two baffles, as described in specification (P22/L5, amended), further, while the reference number "447" in first baffle points to a top opening a corresponding reference number "445" in second baffle points to a tube and not to an opening;

- in Fig. 9B, reference number "447" points to top opening, while the specification refers to "top opening (...) 446" (P22/L5, amended);
- in Fig. 5B, 5D, 6B reference number "447" points to bottom opening, while the specification refers to "bottom opening 449" (P22/L5, amended);
- Fig. 7B does not show "bottom opening 449" for either of two baffles, as described in specification (P22/L5, amended), further, while the reference number "445" in first baffle points to a bottom opening a corresponding reference number "447" in second baffle points to a tube and not to an opening;
- in Fig. 9B reference number "445" points to bottom opening, while the specification refers to "bottom opening 449" (P22/L5, amended);
- in Fig. 11, reference number "57" does not show "evacuated shell" as described in specification P25/L12;
- in Fig. 11, reference number "59" does not show "internal vessel" as described in specification P25/L17.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because they include multiple instances when more than one reference character has been used to designate the same part:

- in Fig. 3B reference numbers "111" and "114" have both been used to designate cylindrical reactor;
- in Fig. 5A-D reference numbers "449" and "448" have both been used to designate the same wall;
- reference numbers "120" (in Fig. 5B, 5D, 9B) and "113" (in other drawings and

- specification) have both been used to designate lower head of reaction vessel;
- reference numbers "120" (in Fig. 5C and 9A) and "112" (in other drawings and specification) have both been used to designate upper head of reaction vessel;

The drawing(s) is/are objected to as failing to comply with 37 CFR 1.84(q) because the contain multiple reference character(s) which, while underlined and without a lead line, appear to be referring to an element next to them and not to the surface or cross-section on which they are placed:

- "400" in Fig. 4, 5D, 9A-B;
- "470" in Fig. 5E-F;
- "460" in Fig. 7A-B;
- "50" in Fig. 10, 11.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The applicant is reminded that the above instances are merely exemplary and that the all drawings should be carefully reviewed and revised to avoid objections.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claim(s) 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 871,752 in view of Dallmeyer et al. (USP 5,387,396), and further in view of Deane (USP 2,744,391) or Matsugi et al. (USP 5,667,758).

Regarding claims 1-2 and 4-5, GB 871,752, in Fig 1, discloses an insulated chemical reactor comprising:

- a reaction vessel (3) having a wall with inner and outer surface;
- an evacuated insulation shell (1) spaced apart from and surrounding said reaction vessel (3);
- a temperature controlling helical channel coil (5) fixed to said outer surface of said wall of said reaction vessel (3);
- said helical channel coil (5) having at least two walls disposed normal to the outer surface of said wall of said vessel, thus defining an open helical channel coil fixed to said wall of said vessel (3);
- said helical coil (5) having a winding pitch so that successive coils of said channel coil are spaced apart from each other, thus defining a closed path to receive a fluid to contact said wall of said reaction vessel (Fig. 1);
- further including insulating material covering an outside surface of said helical channel coil (P2/L53-57).

The reference does not explicitly disclose at least one isothermal mixing baffle disposed within said reaction vessel, a phase separator in fluid communication with said baffle, so that only one saturated of sub-cooled liquid phase of a heat transfer working fluid enters said isothermal mixing baffle or means to combine vapor from said phase separator and vapor from said isothermal mixing baffle and introduce said vapor into said helical channel coil.

Dallmeyer et al. teaches that it is known in the art to cool a reaction vessel by use of at least one isothermal mixing baffle (10) disposed within said reaction vessel, a phase separator (18) in fluid communication with said baffle (10), so that only one saturated of sub-cooled liquid

phase of a heat transfer working fluid enters said isothermal mixing baffle (10), and means (20) to combine vapor from said phase separator (18) and vapor from said isothermal mixing baffle (10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add additional cooling capacity of at least one isothermal mixing baffle of Dallmeyer et al. to the chemical reaction vessel of GB 871,752 for the purpose of increasing cooling capacity of said reaction vessel.

While Dallmeyer et al. discloses that the combined vapor from the phase separator and the isothermal mixing baffle is recovered (abstract), the reference does not disclose any further use of said vapor. As one of ordinary skill in the art would realize that said vapor may still have heat capacity which can be used to further cool the reaction vessel, it would have been obvious to one having ordinary skill in the art at the time the invention was made to introduce said vapor to the helical channel coil to maximally utilize said cooling capacity. To do so would optimize the operation of the reaction vessel and would be done routine experimentation by an ordinary skilled artisan.

The references do not explicitly disclose the temperature controlling helical channel coil comprising a generally rectangular shaped channel fixed to said outer surface of said reaction vessel and having two flat parallel walls, each in contact with said reaction vessel.

It is well known in the art that the channel coil can have a variety of shapes of configurations, including C-shaped (semicircular), square, circular, rectangular, polygonal, etc., which are equivalents (as evidenced by Deane, C2/L55-57, or Matsugi et al., C4/L61-65). The change in configuration or shape of a device is obvious absent persuasive evidence that the

particular configuration is significant. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify vessel of GB 871,752 to include a variety of channel coil shapes, as taught by Deane or Matsugi et al. An ordinary skilled artisan would have been motivated to do the foregoing in order to increase the efficiency of heat exchange as well as simplify the manufacturing process.

The examiner notes that the intended purpose of the channel coil "serving to add structural strength (...)" does not require any structure that differs from the structure of GB 871,752. It is obvious, if not inherent, that the helical coil would add structural strength to the vessel. In addition, it would have been obvious to one of ordinary skill in the art to change the thickness of the reactor vessel wall, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955). Where the only difference between the prior art and the claims is a recitation of relative dimensions of the claimed device, and the device having the claimed dimensions would not perform differently than the prior art device, the claimed device is not patentably distinct from the prior art device, *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984). It is well known in the art that the thinner the walls in heat exchange vessel the better the heat exchange efficiency and that many design parameters are taken into consideration when determining the thickness of the walls.

Regarding limitations recited in claims 1-2 and 4-5 which are directed to a manner of operating disclosed reactor, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do

not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

Response to Arguments

7. Applicant's arguments filed on 24 October 2003 have been fully considered but they are not persuasive.

8. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The applicant argues that GB 871,752 does not disclose the helical channel coil having at least two flat parallel walls disposed normal to and in contact with the outer surface of the wall of the vessel. In response the applicant would like to point out that GB 871,752 was not relied upon to teach helical channel coil having at least two flat parallel walls disposed normal to and in contact with the outer surface of the wall of the vessel. But the examiner has relied upon the disclosure of Deane (C2/L55-57) and Matsugi et al. (C4/L61-65) to establish equivalency of helical coil shaped as in GB 871,752 with helical coil having at least two flat parallel walls disposed normal to and in contact with the outer surface of the wall of the vessel. Accordingly, as instant specification is silent to unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the helical coil shape of GB 871,752 with helical coil having at least two flat parallel walls disposed normal to and in contact with the outer surface of the wall of the vessel, since such modification would have involved a mere substitution of known equivalent structures. A substitution of known equivalent structures is generally recognized as being within the level of ordinary skill in the art.

9. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., channel coil covering the entire outer vertical portion of the inner vessel; specific structure of boiling tubes; specific reactions performed in the reactor) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

10. The applicant argues that the references do not suggest that said helical coil is added to add structural strength to the inner vessel and to maintain the structural integrity of the vessel. However the applicant fails to show how the instant invention is structurally different from the prior art, as set forth above. It appears that the applicant is arguing that an unrecognized advantage results that is unobvious from the prior art. The mere recognition that structural strength and integrity of the vessel is increased by attaching of helical coil to vessel wall, as suggested by the applied prior art does not impart patentability to the claimed subject matter. See *Ex parte Obiaya*, 227 USPQ 58 (Bd. Pat. App. & Int. 1985), *aff'd*, mem., 795 F.2d 1017 (Fed. Cir. 1986) ("[t]he fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise have been obvious").

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

Art Unit: 1764


MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453. The examiner can normally be reached on Monday through Thursday, from 9:00 AM to 7:30 PM.

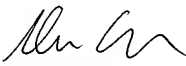
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Basia Ridley 
Examiner
Art Unit 1764

BR
January 6, 2004


Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700